

**Supplementary Table S1.** Clinical characteristic in the RA-associated comorbidities.

| Clinical features                | RA group<br>(n=65) | RA-MS<br>group<br>(n=24) | RA-ILD<br>group<br>(n=21) | <i>p</i> -value <sup>a</sup> | <i>p</i> -value <sup>b</sup> |
|----------------------------------|--------------------|--------------------------|---------------------------|------------------------------|------------------------------|
| General demographics             |                    |                          |                           |                              |                              |
| Female, n (%)                    | 46 (70.8%)         | 18 (75.0%)               | 8 (38.1%)                 |                              |                              |
| Age, years                       | 55.5 ± 11.6        | 56.8 ± 13.2              | 58.4 ± 10.2               | 0.209                        | 0.168                        |
| Disease duration, years          | 7.5 ± 2.6          | 7.0 ± 1.5                | 8.4 ± 3.2                 | 0.242                        | 0.104                        |
| Waist circumference, centimetres | 82.9 ± 2.2         | 88.2 ± 3.3               | 84.3 ± 3.7                | 0.346                        | 0.248                        |
| Laboratory measures, median      |                    |                          |                           |                              |                              |
| ESR (mm/h)                       | 43.5               | 45.0                     | 70.0                      | 0.291                        | <b>0.042</b>                 |
| CRP (mg/L)                       | 15.1               | 13.8                     | 36.9                      | 0.432                        | <b>0.003</b>                 |
| RF (IU/mL)                       | 64.1               | 194.5                    | 260.0                     | <b>0.046</b>                 | <b>0.036</b>                 |
| Anti-CCP (U/mL)                  | 27.0               | 200.7                    | 135.9                     | <b>0.042</b>                 | <b>0.008</b>                 |
| RA33 (U/mL)                      | 4.0                | 4.8                      | 4.1                       | 0.407                        | 0.365                        |
| DAS28                            | 5.2                | 5.6                      | 6.4                       | 0.104                        | <b>0.046</b>                 |
| WBC (10 <sup>9</sup> /L)         | 6.4                | 6.8                      | 8.2                       | <b>0.026</b>                 | <b>0.003</b>                 |
| Neutrophil %                     | 66.3               | 74.2                     | 74.1                      | <b>0.032</b>                 | <b>0.024</b>                 |
| Hb (g/L)                         | 119.0              | 115.5                    | 114.0                     | 0.362                        | 0.408                        |
| PLT (10 <sup>9</sup> /L)         | 243.5              | 246.5                    | 257.0                     | 0.124                        | 0.080                        |

ESR: erythrocyte sedimentation rate; CRP: C-reactive protein; RF: rheumatoid factors; Anti-CCP: anti-cyclic citrullinated peptide antibodies; RA33: anti-RA 33 antibody; WBC: white blood cells; Hb: haemoglobin. Bold values indicate statistical significance, *p*-value <0.05.

<sup>a</sup> RA group patients compared with RA-MS group patients; <sup>b</sup> RA group patients compared with RA-ILD group patients.

**Supplementary Table S2.** Diagnostic values of AIM, CRP, ESR, RF and anti-CCP in high disease activity in RA patients.

| Index        | AUC   | Std   | <i>p</i> -value | sensitivity | specitivity | 95% CI for AUC |       |
|--------------|-------|-------|-----------------|-------------|-------------|----------------|-------|
|              |       |       |                 |             |             | Lower          | Upper |
| AIM          | 0.855 | 0.038 | 0.000           | 0.906       | 0.716       | 0.781          | 0.929 |
| CRP          | 0.635 | 0.059 | 0.012           | 0.600       | 0.824       | 0.520          | 0.792 |
| ESR          | 0.794 | 0.048 | 0.000           | 0.812       | 0.676       | 0.699          | 0.888 |
| RF           | 0.694 | 0.055 | 0.008           | 0.365       | 0.735       | 0.585          | 0.802 |
| Anti-CCP     | 0.728 | 0.052 | 0.002           | 0.435       | 0.867       | 0.626          | 0.830 |
| AIM+CRP+ECR  | 0.905 | 0.029 | 0.000           | 0.918       | 0.882       | 0.847          | 0.962 |
| AIM+Anti-CCP | 0.893 | 0.032 | 0.000           | 0.826       | 0.862       | 0.831          | 0.956 |

AUC: area under curve.

**Supplementary Table S3.** Clinical features in 24 RA patients with integrative medicine treatment.

| Clinical features, median (IQR)                                   | n  | ESR | CRP  | DAS28 | RF  | Anti-CCP |
|-------------------------------------------------------------------|----|-----|------|-------|-----|----------|
| <b>Disease activity (DAS28-ESR)</b>                               |    |     |      |       |     |          |
| moderate activity (3.2 < DAS28 ≤ 5.1)                             | 9  | 23  | 4.7  | 4.6   | 213 | 102.5    |
| high activity (DAS28 > 5.1)                                       | 15 | 70  | 33.9 | 6.8   | 442 | 324.9    |
| <b>Treatment</b>                                                  |    |     |      |       |     |          |
| DMARDs + Glucosidorum Tripterygll Totorum tablets                 | 10 | 61  | 13.6 | 5.3   | 159 | 151.4    |
| DMARDs + Bark of Giral daphne                                     | 8  | 59  | 10.4 | 5.8   | 166 | 183.1    |
| DMARDs + Glucocorticoid+ Glucosidorum Tripterygll Totorum tablets | 6  | 62  | 55.5 | 6.4   | 230 | 336.4    |